

IV.—*Considerations on the Neuropterous Genus Chauliodes and its Allies; with Notes and Descriptions.* By R. M'LACHLAN, F.L.S.

It is by no means an axiom in natural history that the larger the object the easier it is to comprehend its affinities; and the insects on which I am now about to make some observations exemplify this in a striking degree. The genera *Chauliodes* and *Corydalis* contain some of the largest Neuropterous species; yet no two genera, perhaps, show less well-marked lines of demarcation or more instability of structure in organs that are generally looked upon as giving tolerably good means for generic diagnosis. It may be of service, therefore, if I propound my views on this subject, deduced from a consideration of the much-increased materials that have now accumulated. For *Corydalis* the enormously elongated mandibles of the male of most species, as exemplified in *C. cornuta*, and for *Chauliodes* the strongly pectinated antennæ and equal mandibles, as shown in the typical *C. pectinicornis*, at one time seemed enough for all generic purposes; but an increased knowledge of forms has shown these grounds to be thoroughly insufficient. Thus in *Corydalis* we find such species as *C. Hecate* (which cannot be generically separated from *C. cornuta* without organizing a system of splitting that would retard rather than advance the science) with equally short mandibles in both sexes; and in *Chauliodes* the structure of the male antennæ is subject to infinite specific variation, these organs being pectinate, foliate, serrate, or simple, according to the species. Looking, therefore, for more stable characters, I regard the presence of few or many transverse veinlets in the wings as the most important character, combined with the presence or absence of a sharp tooth at the lower angles of the head, though, as will be shown, this latter is subject to much modification.

In 1832, G. R. Gray, in Griffith's edition of Cuvier, proposed the term *Hermes* for an insect with simple male antennæ, but which can scarcely be considered other than a *Chauliodes*. In 1842, Rambur, in his 'Histoire des Névroptères' (Suites à Buffon), separated four species under a genus which he called *Neuromus*; two of these are closely allied to *Corydalis*, the others can be regarded as only forms of *Chauliodes*, one of them being identical with Gray's type of *Hermes*. However, I propose to adopt Rambur's genus for his two most typical species and for allies since discovered. Their relationship to *Corydalis* is very close, yet they have a facies that separates them therefrom, and the tooth at the hinder angles of the head

vanishes in some species, showing a good transition between *Corydalis* and *Chauliodes*, the wings having the numerous transverse nervules of the former. Authors have variously adopted these several terms. Walker, in his British-Museum Catalogue, uses *Corydalis*, *Chauliodes*, and *Hermes*, placing in the latter Rambur's most typical forms of *Neuromus* and many species of *Chauliodes*; and the two species described in his paper in the Trans. Ent. Soc. London, new series, vol. v. should both be referred to *Neuromus*. Hagen, in his North-American Synopsis, adopts only *Corydalis* and *Chauliodes*, placing in the former the typical species of *Neuromus*; and in this he was for the most part followed by me in my revision of Walker's species in the 'Journal of the Linnean Society, Zoology,' vol. ix. Brauer, in the first part of his elaborate Catalogue of Neuroptera, has *Corydalis*, *Chauliodes*, and *Neuromus*; and though the list of the species he proposes to place under each is not yet published, I opine that he views the genera in the same light as I now do. The three genera may be briefly diagnosed thus:—

CORYDALIS.

Alæ venulis transversalibus plurimis. Antennæ maris simplices vel denticulatæ. Mandibulæ maris elongatæ vel breves. Capitis angulis posticis dente acuto instructis. Forma valde robusta. Color plus minusve fuscescens.

NEUROMUS.

Alæ venulis transversalibus plurimis. Antennæ maris simplices. Mandibulæ ♂ ♀ breves, æquales. Capitis angulis posticis dente evidenter vel obsolete instructis. Forma minus robusta. Color plus minusve pallidus.

CHAULIODES.

Alæ venulis transversalibus paucis. Antennæ maris pectinatæ, foliaceæ, serratæ, vel simplices (interdum in fœmina serratæ). Mandibulæ ♂ ♀ breves, æquales. Capitis angulis posticis inermibus.

In *Neuromus*, *N. grandis* and *N. infectus* approach more nearly to *Chauliodes*, as they want the tooth on the hinder angles of the head; yet they possess the numerous transverse nervules and the general appearance of *N. testacea*. The species of this genus much resemble each other, even to the frequent presence of a black line, or spots, on each side of the thorax.

I conclude this paper by noticing some synonymic corrections, by describing some new species, and by giving a list of the species I propose to place under *Chauliodes* and *Neuromus*.

Hermes costalis, Walker (of which *Hermes anticus*, Walker, is a ♀) is identical with *Neuromus grandis*, Thunberg (*Hemero-bius grandis*, Thbg. Nov. Ins. Sp. pt. i. p. 28, fig. 44, from Japan). The species varies considerably in the number of pale spots; and the Chinese examples show an approach to my *C. infectus* from Darjeeling.

Hermes dubitatus, Walker (without locality), is not the ♀ of *Chauliodes californicus*, as supposed by Hagen, in which he was followed by me (Journ. Linn. Soc., Zool. vol. ix.), but is identical with *H. diversus*, Walker (New Zealand). The types of *diversus* have the wings much crumpled, and I have only recently seen perfect examples.

Hermes maculifera, Walker, appears to be only the ♀ of *maculipennis*, Gray, though the difference of the localities (Malabar and Java) would favour the suspicion of their being distinct.

Chauliodes disjunctus, Walker (in Lord's 'Naturalist in Vancouver's Island and British Columbia'), is a good species of *Chauliodes*, and the largest yet known. I also possess it from Vancouver's Island, but have only seen females.

Hermes 10-maculatus and *H. corripiciens*, Walker (Trans. Ent. Soc. Lond. new series, vol. v.), are species of *Neuromus* allied to *N. testaceus* and *N. hieroglyphicus*. *Corripiciens* is from Brazil; but there is no label to indicate the locality of *10-maculatus*.

Chauliodes fraternus, n. sp.

C. nigro-fuscus. Caput nigrum, postice utrinque sub oculis, et in macula triangulata, nitido-rufescens. Antennæ nigræ. Prothorax subquadratus, paullo latior quam longus. Alæ sat latæ, griseo-subhyalinæ, saturate griseo nebulosæ; pterostigma macula magna elongata nigro-fusca utrinque ornatum; area subcostalis maculis nigro-fuscis; venulis costalibus crassis, curvatis, nigro-fuscis: posticæ fere ut anticæ. Long. corp. 13''' ; exp. alar. 50''' (♀).

Hab. in China septentrionali. In coll. Mus. Brit.

Blackish fuscous. Head black above, with a triangular, reddish, shining spot in the middle of the posterior margin, and the sides below the eyes also reddish; beneath shining piceous. Antennæ black, obsoletely serrate internally. Mandibles piceous. Prothorax subquadrate, slightly broader than long, scarcely narrower than the head without the eyes, fuscous, suffused with yellowish in the middle above. Meso- and metathorax fuscous. Abdomen dull blackish fuscous. Legs greyish yellow; knees, femora internally, tibiæ externally, and tarsi wholly fuscous; trochanters and femora clothed with short yellowish pubescence.

Wings rather broad, greyish, subhyaline, clouded with darker grey, especially in the apical half, with a large, elongate, blackish-fuscous spot on each side of the pale pterostigmatal region, and with blackish-fuscous spots in the subcostal area; costal veinlets curved, strong, blackish fuscous; longitudinal veins blackish fuscous; transverse veinlets of the disk few, fine, and pale: the coloration of the posterior wings almost precisely identical with that of the anterior.

Allied to *C. japonicus* and *C. Bowringi*, more closely to the former, but apparently distinct.

Chauliodes tenuis, n. sp.

C. griseo-testaceus. Antennæ maris simplices. Prothorax elongatus, capite angustior. Abdomen nigricans, appendicibus superioribus elongato-conicalibus, inferioribus fere obsoletis. Pedes ochraci, genibus tarsisque fusciscentibus. Alæ anticæ angustæ, griseo-subhyalinæ, conferte griseo notatæ, punctis tribus griseo suffusis inter sectorem et cubitum posticum nigricantibus: posticæ hyalinæ, punctis duobus inter sectorem et cubitum nigricantibus (♂). Long. corp. 11^{'''}; exp. alar. 26^{'''}.

Hab. in Africa australi. In coll. Mus. Brit.

Greyish testaceous. Head elongate. Antennæ concolorous, simple. Prothorax elongate, narrower than the head; metathorax ochreous. Abdomen blackish; superior appendices elongately conical, hairy. Legs ochreous; knees and tarsi fusciscent.

Anterior wings elongate, narrow, subacute, subhyaline, with a greyish tinge, and with numerous small pale-grey spots arranged somewhat in transverse series; in the space between the sector and cubitus anticus are three blackish, somewhat corneous points, each clouded with grey; neuration pale fuscous: posterior wings hyaline, with greyish neuration; there are two blackish points in the same area as in the fore wings.

A somewhat delicate insect, from Kysna, South Africa; allied to the New-Zealand *C. diversus*, but smaller.

List of described Species of Chauliodes.

Asia.

C. sinensis, Walker.

Chauliodes sinensis, Walk. Cat. Brit. Mus. Neurop. p. 199 (1853).

China.

C. japonicus, M'Lachlan.

C. japonicus, M'Lachl. Journ. Linn. Soc., Zool. vol. ix. p. 232 (1867).

Japan.

C. fraternus, M'Lachlan, *ante*, p. 37.
North China.

C. simplex, Walker.

C. simplex, Walk. Cat. Brit. Mus. Neurop. p. 200 (1853).
Silhet.

C. Bowringi, M'Lachlan.

Hermes sinensis, Walk. Cat. Brit. Mus. Neurop. p. 203 (1853). *C.*
Bowringi, M'Lachl. Journ. Linn. Soc., Zool. vol. ix. p. 260.

Hongkong.

C. subfasciatus, Westwood.

C. subfasciatus, Westw. Cab. Or. Entomol. p. 70, pl. 34. fig. 5 (1848);
Walk. Cat. Brit. Mus. Neurop. p. 200.

Silhet.

C. pusillus, M'Lachlan.

C. pusillus, M'Lachl. Journ. Linn. Soc., Zool. vol. ix. p. 231 (1867).

India? (locality unknown).

*C. maculipennis**, G. R. Gray.

Hermes maculipennis, Gray, in Griffith's edit. of Cuvier, vol. ii. p. 331,
pl. 72. fig. 1 (1832). *Neuromus ruficollis*, Ramb. Névrolog. p. 443
(1842). *Hermes ruficollis*, Walk. Cat. Brit. Mus. Neurop. p. 202.
Hermes maculifera, Walk. Cat. Brit. Mus. Neurop. p. 203 (1853).

Java, Malabar.

Australia and New Zealand.

C. guttiferus, Walker.

Hermes guttiferus, Walk. Cat. Brit. Mus. Neurop. p. 204 (1853).

Australia.

C. diversus, Walker.

Hermes diversus, Walk. Cat. Brit. Mus. Neurop. p. 205 (1853). *H. du-*
bitatus, Walk. *op. cit.* p. 204.

New Zealand.

Africa.

C. tenuis, M'Lachlan, *ante*, p. 38.

South Africa.

* This is the most aberrant species of the genus, and its relationship to *Neuromus grandis* and *infectus* is close, even to the character of the markings: hence, if it should hereafter be considered desirable to reinstate Gray's genus *Hermes*, these three species should be placed therein.

North America.

C. pectinicornis, Linné.

Hemerobius pectinicornis, Linn. Amœn. Acad. vi. p. 412 (1763); Syst. Nat. ed. xii. p. 911. *Semblis pectinicornis*, Fab. Sp. Ins. vol. i. p. 386. *Chauliodes pectinicornis*, Latr. Gen. Crust. et Insect. vol. iii. p. 198; Burm. Handb. p. 950; Ramb. Névrolog. p. 444; Walk. Cat. Brit. Mus. Neurop. p. 198; Hag. Neurop. N. Amer. p. 189.

Canada and United States.

C. rastricornis, Rambur.

C. rastricornis, Ramb. Névrolog. p. 444 (1842); Walk. Brit. Mus. Cat. p. 198; Hag. Neurop. N. Amer. p. 189. *Hermes indecisus*, Walk. Cat. Brit. Mus. Neurop. p. 204 (1853) ♀.

United States.

C. virginiensis, Drury.

Hemerobius virginiensis, Drury, Ex. Ins. (1773). *Chauliodes virginiensis*, Westwood, ed. Drury, vol. i. p. 105, pl. 46. fig. 3; Hag. Neurop. N. Amer. p. 190. *Hemerobius pectinicornis*, Palis. Beauv. Ins. Afr. et Amér. pl. 1. fig. 2, nec Linn. (teste Hagen).

Virginia.

C. californicus, Walker.

C. californicus, Walk. Cat. Brit. Mus. Neurop. p. 199 (1853); Hag. Neurop. N. Amer. p. 190.

California.

C. angusticollis, Hagen.

C. angusticollis, Hag. Neurop. N. Amer. p. 191 (1861).

United States.

C. disjunctus, Walker.

C. disjunctus, Walk. in Lord's 'Naturalist in Vancouver's Island and British Columbia,' vol. ii. app. 334 (1866).

Vancouver's Island.

C. serricornis, Say.

C. serricornis, Say, in Long's Exped. vol. ii. app. p. 307 (1823); Hag. Proc. Ent. Soc. Phil. vol. ii. p. 180; Burm. Handb. p. 949. *Neuro-mus maculatus*, Ramb. Névrolog. p. 442, pl. 10. fig. 2 (1842). *Hermes maculatus*, Walk. Cat. Brit. Mus. Neurop. p. 202. *C. maculatus*, Hag. Neurop. N. Amer. p. 191.

Canada, United States.

C. fasciatus, Walker.

C. fasciatus, Walk. Brit. Mus. Cat. Neurop. p. 201 (1853); locality ("New Holland") erroneous. *C. serricornis*, Hag. Neurop. N. Amer. p. 190, nec Say. *C. lunatus*, Hag. Proc. Ent. Soc. Phil. vol. ii. p. 180 (1863).

United States.

South America.

C. cinerascens, Blanchard.

C. cinerascens, Blanch. in Gay's 'Historia fisica de Chile,' vol. vi., Atlas Novróp. lám. ii. fig. 10 (1851).

C. chilensis, Hag. Neurop. N. Amer. app. p. 321 (?), not described.

Chili.

Neuromus infectus, n. sp.

N. brunneus; thorax vitta interrupta nigra utrinque ornatus. Caput lateribus inermibus. Antennæ nigrae, simplices. Alæ anticæ pallide fuliginosæ, maculis magnis plus minusve confluentibus in dimidio basali, unaque rotundata discali pone medium, albidis; venulis costalibus albido marginatis: posticæ pallidiores, dimidio basali hyalino, macula rotundata pone medium ut in anticis. Long. corp. 12–15^m; exp. alar. 38–49^m (♂ ♀).

Hab. Darjeeling. In coll. Mus. Brit., Oxon., et auct.

Brown or brownish testaceous; pro- and mesothorax above with an interrupted black line on each side. Antennæ simple in both sexes, black. Prothorax longer than broad, narrower than the head. Legs blackish fuscous (paler in the ♀), with the base of the tibiæ, and the femora beneath, ochreous. Appendices of the ♂—app. sup. elongate, acuminate, turned inwards, dull greyish, hairy; app. inf. long, two-jointed, the basal joint short, the second joint very long, curved strongly inwards, acute, the points crossing; ventral plate very deeply excised, the sides produced into long, triangular, straight processes.

Wings: anterior wings pale smoky fuscous, shining (paler in the ♀), with large, irregular, more or less confluent, whitish blotches in the basal half, and a large, rounded, isolated whitish spot in the disk beyond the middle; costal veinlets white and margined with whitish, so that the interstice between each veinlet seems to be occupied by an oblong fuscous space; costa, subcosta, radius, and all the apical neuration, fuscous; the basal veins and veinlets in the whitish blotches are yellowish; transverse discal veinlets numerous in the apical half: posterior wings paler than the anterior; the basal half hyaline with yellowish neuration, the apical half smoky, with fuscous neuration, no basal blotches, but with the isolated round discal spot beyond the middle, as in the anterior.

Allied to *N. grandis*, Thbg., of which it might be considered a strongly marked local form, and the Chinese examples of which approach it in coloration; but that species appears to have short and truncate superior appendices, though with a like-formed ventral plate.

Neuromus montanus, n. sp.

N. pallide fusco-griseus. Caput parvum, elongatum; lateribus dente acuto instructis, ochraceis. Antennæ graciles, nigrae; articulo secundo pallido. Mandibulae palpique griseo-ochracea. Prothorax longior quam latus, capite vix angustior, fusco-griseus. Pedes ochracei. Alæ pallide albido-stramineæ; venulae costales, discales, venaque cubitalis ad basin fusca, tenues, reliquæ flavida (♀). Long. corp. 11''; exp. alar. 37''.

Hab. Sikkim Himalaya, alt. 9000'. In coll. Mus. Brit.

Head small, elongate, posterior angles with a sharp tooth; ochreous, the sockets of the ocelli blackish. Antennæ very slender, black, the second joint pale. Mandibles and palpi greyish ochreous. Prothorax longer than broad, scarcely narrower than the head, greyish fuscous, the deflexed sides margined with lurid fuscous. Meso- and metathorax grey. Abdomen blackish (but the colours probably altered). Legs entirely ochreous, finely pubescent; the claws castaneous.

Wings very pale whitish straw-colour; the costal and discal transverse nervules and the base of one of the cubital nervules fuscous, not incrassated; the neuration otherwise yellowish.

One badly preserved individual in the British Museum, from Lacken, Sikkim Himalaya, at an elevation of 9000 feet.

Neuromus fenestralis, n. sp.

N. rufo-brunneus. Caput latum; lateribus anguste alatis, dente robusto instructis; circum ocellos basinque antennarum nigrum. Antennæ nigrae; articulo primo rufo, supra in medio nigro notato; secundo ad basin nigro, ad apicem rufo. Mandibulae nigrae. Maxillae rufae, ad basin nigrae. Prothorax capite angustior, late nigro limbatus. Abdomen, meso- et metasternum flavo-ochracea; abdominis segmento ultimo supra in medio producto; appendicibus superioribus elongatis, crassis, paullo clavatis, intus sinuatis; inferioribus valde elongatis, triarticulatis, articulis duobus terminalibus brevibus, ultimo forcipato, acuto. Pedes nigri; antici femoribus intus, coxis trochanteribusque omnino rufo-ochraceis; intermedii posticique femoribus, coxis trochanteribusque omnino rufo-ochraceis. Alæ anticae fuliginoso-fusca, albo fenestrata et maculata, nigro nervosa; venulis costalibus crassis, nigro marginatis; posticae fusco-subhyalinae (♂). Long. corp. 16-19''; exp. alar. 45-51''.

Hab. Darjeeling. In coll. Mus. Brit.

Reddish brown. Head broad, narrowly produced at the sides, and furnished with a strong acute tooth at the lower angles; disk above with fine, raised, intricately wavy lines, an elongate and somewhat smooth space in the middle posteriorly; front (portion in front of the ocelli) rugose-punctate; sockets of the ocelli and of the antennæ black. Antennæ

black, the basal joint red, with a black mark above; second joint black at the base, red at the apex. Mandibles and base of the maxillæ black. Palpi reddish. Prothorax much narrower than the head, rather longer than broad, above finely transversely rugose, the sides broadly black. Mesonotum ochreous, suffused with fuscous. Abdomen and the underside of meso- and metathorax yellowish ochreous. The last abdominal segment is produced in the middle above. Superior appendices elongate, thick, clubbed at the apex, the inner edge sinuate; inferior appendices long, three-jointed, the two terminal joints short, the last curved abruptly inwards, claw-shaped and acute; penis (or that which I take for it) long, flattened, transversely wrinkled, acuminate and truncate at the apex. Legs—anterior pair black, with a line on the inner side of the femora, and the trochanters and coxæ wholly, reddish; intermediate and posterior pairs with black tibiæ and tarsi, otherwise reddish.

Anterior wings smoky fuscous, with the costal and subcostal areas paler; two very large subquadrate white spaces (traversed by black veins), one near the base, the other in about the middle, extending from the radius more than half across the wing; beyond these are two or three small quadrate white spots on the disk, and two or three between the radius and sector; costal veinlets very strong, straight, black, and margined with black; longitudinal veins and transverse veinlets (especially those of the base) strong and black: posterior wings subhyaline, tinged with fuscous; costal veinlets, and those between the radius and sector, black, the latter clouded with blackish.

I have seen two males of this conspicuous species.

Neuromus latratus, n. sp.

N. sordide brunneus. Caput latum; lateribus anguste crenulato-alatis, nigris, dente acuto instructis; brunneum. Antennæ mandibulæque nigræ. Prothorax capite angustior, longior quam latus, maculis elongatis duabus utrinque nigris. Meso-, metathorax et abdomen griseo-ochracea; abdominis segmento ultimo supra in medio producto; appendicibus superioribus crassis, clavatis; inferioribus biarticulatis, articulo secundo abrupte incurvato, acuto; penis (?) elongatus, ad apicem excisus. Pedes ochracei, tibiis tarsisque nigris. Alæ griseo-subhyalinæ, posticæ pallidiores: anticæ venulis costalibus, basalibus et illis inter radium et sectorem incrassatis, nigris; venis longitudinalibus flavis (♂). Long. corp. 17^{mm}; exp. alar. 48^{mm}.

Hab. in India orientali. In coll. Mus. Brit.

Dull brown. Head broad, brown; the sides narrowly mar-

gined, the produced portion being crenulate and black; sockets of the ocelli black; disk with fine wavy, intricate, raised lines. Mandibles and antennæ black. Prothorax much narrower than the head, longer than broad, finely transversely rugose, a lanceolate smooth space in the middle posteriorly; on each side is a black vitta divided into two elongate spots, whereof the lower is the longer and is furcate at its upper end. Meso- and metathorax and abdomen dull ochreous; last abdominal segment produced in its middle above into a somewhat quadrate process; superior appendices moderately long, the tips thickened, clothed with fine yellowish pubescence; inferior appendices long, two-jointed, the second joint abruptly curved inwards in the form of an acute claw; penis (?) long, flat, the sides parallel, the apex acuminate, sulcated beneath, and bifid, the two extreme tips turned slightly outwards. Legs dull ochreous, with all the tibiæ and tarsi black.

Wings greyish, subhyaline, the posterior pair paler; in the anterior wings all the costal veinlets strong and black; the basal veinlets and those between the radius and sector also strong and black, and margined with black; apical veinlets fuscous; longitudinal veins yellow: posterior wings with the costal veinlets, and those between the radius and sector, black.

I have seen one male. The part which I have called the penis, in this and the last species, is perhaps not truly that organ, and may be only a greatly elongated lower valve.

Neuromus intimus, n. sp.

N. griseo-luteus. Caput modice latum, dente utrinque instructum, inter ocellos nigrum. Antennæ (præter articulos duos basales) mandibulæque (macula ad basin excepta) nigrae. Prothorax supra utrinque nigro bimaculatus. Appendices superiores elongatæ, latæ, ad apicem acuminatæ: inferiores biarticulatæ, geniculatæ; articulus primus brevis, tuberculo ad basin instructus, secundus elongatus, acutus. Pedes flavi; tibiis tarsisque nigro-fuscis, intus pallidioribus. Alæ griseo-hyalinæ: anticæ venis longitudinalibus flavis, venulis costalibus discalibusque incrassatis, nigris: posticæ venulis costalibus illisque inter radium et sectorem nigris (♂). Long. corp. 14–15^{'''}; exp. alar. 41–43^{'''}.

Hab. in India orientali. In coll. Mus. Brit.

Pale greyish yellow. Head moderately broad, the sides scarcely produced, but with an evident tooth at each lower angle; a black spot between the ocelli. Antennæ black, the two basal joints yellow. Mandibles black, with a pale spot at the base externally. Prothorax slightly narrower than the head, and slightly longer than broad; two large oval black spots on each side above, the lower being the larger. Abdo-

men brownish : superior appendices long, broad, flattened, the apex acuminate and turned under, pubescent : inferior appendices long, two-jointed, the basal joint very short, broad, and with a rounded tubercle at the base, above ; second joint very abruptly turned inwards at an acute angle with the first joint, long, claw-shaped, the tips being black, curved, and acute : ventral plate (last ventral segment) nearly quadrate, but with the apical margin broadly and shallowly excised. Legs—femora yellow ; tibiæ and tarsi blackish, brownish internally, with yellow pubescence.

Wings hyaline, with a very slight greyish or fuscous tinge : in the anterior wings the costal veinlets and almost all the transverse veinlets are thickened and black ; longitudinal veins yellow, the costa, subcosta, and radius being somewhat brownish : posterior wings with the costal veinlets and those between the radius and sector black, neuration otherwise yellow.

I have seen two males of this species, which is most nearly allied to *N. testaceus*, Rambur, but differs in the colour of the legs and in the appendices.

List of described Species of Neuromus.

N. grandis, Thunberg.

Hemerobius grandis, Thbg. Nov. Ins. Sp. pt. 1. p. 28, fig. 44 (1781).

Hermes costalis, Walker, Cat. Brit. Mus. Neurop. p. 207 (1853).

H. anticus, Walk. *op. cit.* p. 205 ♀ (1853).

Japan, China.

N. infectus, M'Lachlan, *ante*, p. 41.

Darjeeling.

N. hieroglyphicus, Rambur.

Neuromus hieroglyphicus, Ramb. Néurop. p. 442 (1842).

Hermes hieroglyphicus, Walk. Cat. Brit. Mus. Neurop. p. 206. *Corydalus hieroglyphica*, Hag. Neurop. N. Amer. p. 194.

Central America, Brazil.

N. corripiciens, Walker.

Hermes corripiciens, Walk. Trans. Ent. Soc. Lond. new ser. vol. v. p. 180 (1860).

Brazil.

N. 10-maculatus, Walker.

Hermes 10-maculatus, Walk. Trans. Ent. Soc. Lond. new ser. vol. v. p. 180 (1860).

Brazil (?) or India (?)

N. testaceus, Rambur.

Neuromus testaceus, Ramb. Névrof. p. 442, pl. 10. fig. 1 (1842). *Hermes testaceus*, Walk. Cat. Brit. Mus. Neurop. p. 206.

Java, India (?).

N. intimus, M'Lachlan, *ante*, p. 44.

India.

N. albipennis, Walker.

Hermes albipennis, Walk. Cat. Brit. Mus. Neurop. p. 206 (1853).

Nepaul.

N. montanus, M'Lachlan, *ante*, p. 42.

Himalaya.

N. latratus, M'Lachlan, *ante*, p. 43.

India.

N. fenestralis, M'Lachlan, *ante*, p. 42.

Darjeeling.

N.B. It is possible that some of the South-American species placed under *Corydalis* in the Appendix to Hagen's 'Synopsis of North American Neuroptera,' and mentioned by name only, may belong to *Neuromus*.

I do not feel in a position to give a catalogue of the species of *Corydalis* (which genus is peculiarly American), especially as so many undescribed species are noticed by Hagen.

V.—*Note on the Animal of Limnæa involuta (Harvey)*.

By A. G. MORE, F.L.S.

[Plate III. fig. 3.]

THE shell of *Limnæa involuta* is now to be seen in many collections; but very little appears to be known concerning the external form of the animal itself, which, in the most recent works on British conchology, still remains undescribed, though the species is by general consent placed under *Amphi-peplea*, whether as a section or subgenus.

Having last week visited the small lake called Lough Crincaum, on Cromaglaun Mountain, 798 feet above the sea, I collected there a number of specimens, which have been living for several days in a glass bowl under constant observation. I am thus enabled to say, with regard to the disputed question of the investing mantle, that there is no ap-